REMARKS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-20 and 22 are presently active in this case. Claim 21 was cancelled by a previous amendment. The present Amendment amends Claims 1, 8-10, 12-13, 16-17 without introducing any new matter or raising new issues.

In the outstanding Office Action, Claims 12, 16, and 18-20 were rejected under 35 U.S.C. § 102(b) as being anticipated by Kohonen et al (IEEE Publication, Self Organization of a Massive Document Collection, May 2000, hereinafter "Kohonen"). Claims 1, 2, 5, 10, 11, 14, 15, 17, and 22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sharp (International Patent Publication WO 02/27508 A1). Claims 3, 4, and 6-9 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sharp in view of Kohonen. Claim 13 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Kohonen in view of Hattori et al. (Publication, "Sequential Learning for SOM Associative Memory with Map Reconstruction," 2001, hereinafter "Hattori") in further view of Jockusch et al. (IEEE Publication, "An Instantaneous Topological Mapping Model for Correlated Stimuli," 1999, hereinafter "Jockusch").

In response, independent Claim 1 is amended to recite features related to the quantization error. These features find non-limiting support in Applicants' disclosure as originally filed, for example in the specification at p. 12, l. 22, to p. 13, l. 13. No new matter has been added. Independent Claim 17 is amended analogously. In addition, similar features were previously presented with original Claim 13, and therefore it is believed that the changes to independent Claims 1 and 17 are not raising any new issues that require further consideration and/or prior art search. Moreover, Claims 8-10, 12-13, and 16 are amended to correct minor formalities, to clarify some features, and to better comply with U.S. claim

drafting practice. In particular, Claims 9, 12, and 16 are amended to clarify features related to the dither component. These features find non-limiting support in Applicants' disclosure, for example in the specification starting at p. 10, l. 24, and in corresponding Fig. 6. No new matter has been added.

In response to the rejections of Claims 1-11 under 35 U.S.C. §§ 102(b) and 103(a), Applicants respectfully requests reconsideration of these rejections and traverse the rejections, as discussed next.

Briefly summarizing, Applicants' Claim 1 is directed to an information retrieval system in which information items map to respective nodes in an array of nodes by mutual similarity of said information items, so that similar information items map to nodes at similar positions in said array of nodes to form an self-organizing map. The information retrieval system includes, *inter alia*: a graphical user interface configured to display a representation of nodes of the organized map as a two-dimensional display array of display points within a display area on a user display; ***a comparator configured to compute a quantization error of a newly received information item*** and comparing the error to the organized map, and ***configured to retrain the organized map when the quantization error is above a predetermined threshold.***

As explained in Applicants' specification at. p. 12, ll. 25-30 in a non-limiting example, it is not necessarily desired that the self-organizing map is retrained every time a new information is added to the map. For example, retraining the map may require a lot of computational resources, and also might rearrange some of the positions of the information items in a map. Because a user is probably used to the relational positions of the information items in a map, such rearrangement may be undesired.

With respect to the current rejections formed in the pending Office Action against original Claim 13, Applicants respectfully submit that none of the references Kohonen, Hattori, and Jockusch, taken in any proper combination, teach the feature:

> ***a comparator configured to compute a quantization error of a newly received information item*** and comparing the error to the organized map, and ***configured to retrain the organized map when the quantization error is above a predetermined threshold***

as required by Applicants' independent Claim 1. The pending Office Action confirms that Kohonen fails to teach such a feature, but asserts that the combination of some passages of Hattori and Jokusch teach such as feature, and further contends that the combination of Kohonen, Hattori and Jokusch is proper. (November 1, 2007 Office Action, p. 11, ll. 12, to p. 12, l.4.) Applicants respectfully disagree with such assertion.

The Office Action states that the proposed modification would have been obvious "to combine the storage system of Kohonen with the error detecting of Hattori in addition to the threshold error of Jokusch to allow for appropriate mapping for a node that are close to each other." (Office Action, p. 12, ll. 1-4.) Applicants respectfully submit that Hattori's method of training a small portion of a self-organizing map *for every new inputted information*, and Jokusch's method of selectively creation of new nodes depending on an error measure ***cannot be combined because they are mutually exclusive***, as next discussed.

First, the reference Hattori describes a method of training a self-organizing map that can avoid a substantial change of the map when a new element arrives. (Hattori, p. 477, Abstract, ll. 16-20.) At arrival of a new input to the map, a part of the map in proximity to the new input is extracted from the entire map and put into a separate memory. (Hattori, p. 481, l. 9-12.) Hattori's method then performs a learning algorithm on the partial map, without affecting the entire map by the learning algorithm. (Hattori, p. 481, l. , Fig. 1)

Moreover, Hattori stresses the importance to apply this algorithm to every new arriving element, by reciting "this remapping within a small area of the map is occurred ***every time a new data is applied***, ... it can ***gradually construct a topology preserving map for all inputs***." (Hattori, emphasis added, p. 478, ll. 9-12, see also p. 481, ll. 15-17, and in the conclusion, p. 484, ll. 3-5.)

Second, the reference Jokusch is directed to a self-organizing network dealing with newly arriving training inputs that are strongly correlated. (Jokusch, p. 529, col. 1, Abstract.) In his algorithm, Jokusch calculates an error difference between the nodes, and thereby only ***a small number of nodes are will create a new node***, if they exceed a certain error threshold. (Jokusch, p. 531, col. 2. ll. 1-7.) Jokusch method suits for particular problems related to "strongly correlated stimulus sequences ***in a fast and robust manner***." (Jokusch, emphasis added, p. 529, col. 1, Abstract, ll. 10-14.) Jokusch clearly expresses that a new node creation "is a reaction to certain stimulus patterns, instead of being triggered by fixed external clock cycles." (Jokusch, p. 531, col. 2, ll. 9-11.) Form this discussion, it appears that Hattori and Jokusch have mutually exclusive features, that server different purposes.

In light of the above discussion, the pending Office Action did not make it clear how Jokusch's creation of new nodes depending on an error measure could be possibly combined with Hattori's principle of remapping a small portion of the map for every time new information arrives. These teachings are clearly conflicting, and therefore, it is not possible to combine both Jokusch and Hattori, taken as a whole, with the teachings of Kohonen.[1] Therefore, Applicants believe that the combination of Kohonen, Hattori and/or Jokusch is not obvious, and respectfully requests reconsideration of the rejection under 35 U.S.C. § 103(a).

[1] See In re Ratti, 270 F.2d 810, 813, 123 USPQ 349, 352 (reversing an obviousness rejection where the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate.")

Independent Claim 17 recites features that are analogous to the features recited in independent Claim 1, directed to an information retrieval method. Accordingly, for the reasons stated above for the patentability of Claim 1, Applicants respectfully submit that the rejection of Claim 17 is also believed to be overcome in view of the arguments regarding independent Claim 1.

In response to the rejection of Claim 12 under 35 U.S.C. § 102(b), Applicants respectfully request reconsideration of this rejection and traverse the rejection, as discussed next.

Briefly summarizing, Applicants' Claim 12 is directed to an information storage system in which information items are processed so as to map to respective nodes in an array of nodes by mutual similarity of the information items, such that similar information items map to nodes at similar positions in the array of nodes to form a self-organizing map. The information storage system includes, *inter alia*: mapping logic configured to map each feature vector to a node in the self-organizing map, the mapping between information items and nodes in the array including ***a dither component configured to display nodes that have substantially identical or identical information items at different locations in a display area to visibly distinguish the nodes*** having substantially identical or identical information items. Dependent Claim 9 that depends upon independent Claim 1 also recites similar features.

Applicants respectfully submit that the applied reference Kohonen fails to teach "a dither component configured to display nodes that have substantially identical or identical information items at different locations in a display area to visibly distinguish the nodes," as required by Applicants' Claim 12. The pending Office Action rejected a similar feature and points out to Kohonen's Fig. 6 on p. 583, and asserted that Kohonen's Fig. 6 "teaches items closely spaced but in different areas of the display." (Office Action, p. 3, ll. 4-8.)

Kohonen's Fig. 6 shows a group of nodes that are formed into clusters, where three nodes are displayed in a triangle with concentrical edges, after a user has performed a keyword search. In addition, associated to the *three nodes* that are displayed, *eight text items are displayed* in the upper portion of Fig. 6 that are associated to these three nodes. (Kohonen, Fig. 6, table a, "Production of color filter substrate for liquid," etc.) These eight items in Table a correspond to the three nodes shown on the screen. This clearly means that for eight information items that were found in a search, only three nodes are shown. However, Applicants' Claim 12 requires that there is "a dither component ***configured to display nodes that have substantially identical or identical information items at different locations in a display area*** to visibly distinguish the nodes." (emphasis added) It appears that despite Kohonen's display using node clusters, at least five nodes are not visibly represented, and therefore Kohonen clearly fails to display nodes that have substantially identical or identical information items at different locations in a display area ***to visibly distinguish the nodes***, as recited in Applicants' Claim 12.

Moreover, Kohonen's arrangement of three nodes in a triangle with concentrical edge points does not anticipate a mapping using a dither component. A dither component used to map nodes would lead to a displaying of nodes that are not regularly arranged in a triangle, as shown in Kohonen. Kohonen fails to teach such a feature, and his method merely plots the output nodes in a representative symmetrical cluster, without providing a dither component (Kohonen, Fig. 6.)

Therefore Kohonen fails to teach every feature recited in Applicants' Claim 12, so that this claim is believed to be patentably distinct over Kohonen. Accordingly, Applicants respectfully traverse, and request reconsideration of the rejection based on Kohonen.[2]

[2] See MPEP 2131: "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference," (Citations omitted) (emphasis added). See also MPEP 2143.03: "All words in a claim must be considered in judging the patentability of that claim

Independent Claim 16 recites features that are analogous to the features recited in independent Claim 12. directed to a information storage method. Accordingly, for the reasons stated above for the patentability of Claim 12, Applicants respectfully submit that the rejection of Claim 16 is also believed to be overcome in view of the arguments regarding independent Claim 12.

The present amendment is submitted in accordance with the provisions of 37 C.F.R. § 1.116, which after Final Rejection permits entry of amendments placing the claims in better form for consideration on appeal. As the present amendment is believed to overcome outstanding rejections under 35 U.S.C. §§ 102(b) and 103(a), the present amendment places the application in better form for consideration on appeal. In addition, the present amendment is not believed to raise new issues because the changes to Claims 1 and 17 merely recite similar features that previously introduced by dependent Claim 13, and the amendments to Claims 8-10, 12-13, and 16 correct minor issues in the claims. It is therefore respectfully requested that 37 C.F.R. § 1.116 be liberally construed, and that the present amendment be entered.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance, and an early action favorable to that effect is earnestly solicited.

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against the prior art."

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicants' undersigned representative at the below listed telephone number.

Respectfully submitted,

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